PELCO Camera and SCADA Integration Guide

PELCO Viewer v3.0

May 2011

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Part: 1

Introduction

This section introduces the PELCO Viewer ActiveX® Control and describes how to install the control on a SCADA computer. In this document, SCADA will refer to either Vijeo Citect, CitectSCADA or CitectFacilities software.

Safety Information
PELCO Viewer Usage
Installing the PELCO ActiveX Control
Connecting to a PELCO Camera from a Project
PELCO Example Project
Further Viewer Features

Safety Information

Hazard categories and special symbols

The following symbols and special messages may appear in this manual or on the product to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

A lightning bolt or ANSI man symbol in a "Danger" or "Warning" safety label on the product indicates an electrical hazard which, as indicated below, can or will result in personal injury if the instructions are not followed.

The exclamation point symbol in a safety message in a manual indicates potential personal injury hazards. Obey all safety messages introduced by this symbol to avoid possible injury or death.

Symbol	Name
	Lightning Bolt
	ANSI man
	Exclamation Point

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.

⚠ CAUTION
CAUTION indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

CAUTION
CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, can result in property damage.

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Before You Begin

SCADA stands for Supervisory Control and Data Acquisition (SCADA) solution. It facilitates the creation of software to manage and monitor industrial systems and processes. Due to SCADA's central role in controlling systems and processes, you must appropriately design, commission, and test your SCADA project before implementing it in an operational setting. Observe the following:

⚠ WARNING
UNINTENDED EQUIPMENT OPERATION Do not use SCADA software as a replacement for PLC-based control programs. SCADA software is not designed for direct, high-speed system control. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

⚠ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.*
- Each implementation of a control system created using SCADA must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Integration of PELCO camera streaming with SCADA is provided as an aid and is not intended to replace a complete security monitoring system.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

* For additional information, refer to NEMA ICS 1.1 (latest edition), "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control".

Chapter 1: PELCO Viewer Usage

The PELCO Viewer ActiveX Control is designed for the PELCO Camera Video Streaming interface in CitectSCADA, CitectFacilities and Vijeo Citect.

The PELCO Viewer ActiveX Control provides the ability to stream video through a SCADA runtime page and control the camera.

Supported PELCO cameras

The PELCO camera interface was developed for the Spectra IV Series IP and Sarix cameras.

Current PELCO IP cameras (cameras that have been launched before 31/01/2011) are supported with this release, including the Sarix range of cameras. Sarix is supported using RTSP, while the remainder of the IP cameras are supported using RTP.

Cameras launched after 31/01/2011 are expected to work but the control has not been tested with later models. The table below lists the cameras for which the Pelco Viewer ActiveX Control has been tested.

Camera	Model
Fixed IP Camera	IP 3701
Spectra IV Dome	Spectra IV-IP
Spectra IV Dome	Spectra IV-IP
Spectra IV PND 35X	Spectra IV-IP
Sarix	IXE20C
Sarix	IX10DN
Sarix	IXS0DN
Spectra HD Sarix	D5118

Chapter 2: Installing the PELCO ActiveX Control

Minimum hardware and software requirements for PELCO Viewer ActiveX Controls for Microsoft Windows XP, Microsoft Windows Vista and Microsoft Windows 7 must be met in order to install and run the PELCO Viewer ActiveX Control.

⚠ WARNING

SYSTEM STABILITY

The Pelco Viewer ActiveX Control must be installed on a SCADA display client to avoid additional CPU and memory overhead on the SCADA server.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Installation requirements

This section describes the requirements for hardware, operating system software and system configuration prior to installing the PELCO Viewer ActiveX Control.

System software

The following system software is required on any computer onto which you want to install the PELCO Viewer ActiveX Control.

Supported operating systems

Windows XP Professional with Service Pack 3 - (32 Bit and 64 Bit)

Windows Vista with Service Pack 2 (32 Bit and 64 Bit)

Windows 7 with Service Pack 1 (32 Bit and 64 Bit)

Other software

- SCADA 7.00 or later
- Microsoft .NET Framework 3.5 SP1
- Microsoft Visual C++ 2008 Redistributable SP1

- A Local Area Network (LAN) if you want to have the client access a remote server.
- Microsoft DirectX 9.0 on Windows XP and 10 on Windows Vista or later
- Sentinel key protection

If you experience problems installing Microsoft .NET framework, download the full .NET 3.5 SP1 installation from the Microsoft site and manually install it, then run the PELCO installation. Alternatively install SCADA 7.20 (which includes .NET 3.5 SP1) first.

If you are prompted by the PELCO installer to install the .NET Framework 3.5 Sp1 you will be redirected to the Microsoft download site to install it. If you are directed to another version of the .NET Framework, please choose the .NET Framework 3.5 Service Pack 1 from the web page to ensure successful installation and function of the PELCO Viewer. Alternatively install SCADA 7.20 (which includes .NET 3.5 SP1) before installing PELCO.

Software installed with the PELCO Viewer ActiveX Control

- ATL Security

System hardware

The PELCO Viewer is a resource intensive component and as such, hardware that meets the recommended requirements should be selected for a SCADA client.

The ActiveX control requires DirectX 3D Acceleration enabled hardware, where video stream rendering is handled by an external processor and RAM configuration on the graphics card.

The following hardware is recommended for a computer that is used as a client running PELCO camera video stream. The display adapters listed below have been tested. Some graphics cards may provide poor quality video and, in some circumstances, loss of colour and pixelation. See Video Streaming Performance for more information on the impact of concurrent video streams on graphics card performance.

The following tables indicate the computer hardware requirements for the SCADA PELCO ActiveX installation.

Minimum hardware requirements

Description	Minimum specification
Processor Type	Intel Pentium 4
Processor Speed	2 GHz
RAM	1 GB
Graphics Adapter	256 MB dedicated video memory

Recommended hardware requirements

Description	Recommended specification or higher
Processor Type	Intel Core™ 2 Duo CPU E7500
Processor Speed	2.93 GHz
RAM	4 GB
Graphics Adapter	ATI Radeon HD 3450 - Dell Optiplex NVDIA GeForce Go 7400 ATI Radeon HD 3450 Pro 1 GB or more dedicated video memory

Note: It is recommended that you run the PELCO interface on dedicated clients and not on any of the other I/O, Alarm or Report Servers.

Video streaming performance

Video streaming with DirectX requires a lot of CPU, memory and especially dedicated on-board video memory. The more dedicated on-board video memory, the more concurrent video streaming connections can be supported.

⚠ WARNING

POOR PERFORMANCE

- The PELCO Viewer requires a graphics adapter with sufficient video memory as indicated in the table below.
- Ensure that no more than four concurrent video sessions are streamed on a single SCADA graphics page.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Depending on your computer's dedicated video memory you should experience reasonable video stream quality, performance, and responsiveness providing that number of concurrent video streaming controls on the same page does not exceed the number in the table below.

Graphic Card Dedicated Video Memory	Max. Number of Concurrent Video Streaming
256 MB	1 - 2
512 MB	2 - 4

Installing the PELCO Viewer ActiveX Control

To install the PELCO Viewer ActiveX Control, run "setup.exe" from the installation media. Follow the onscreen prompts to complete installation of the control.

Documentation

After a successful installation, the documentation is available from the Windows Start menu (Start > Programs > Schneider Electric > PELCO > PELCO User Guide).

Verifying the camera video streaming

The video rendering can be verified by launching the PELCO Diagnostic Player. PELCO Diagnostic Player can be launched either from the installed directory or the Windows Start menu (Start > Programs > Schneider Electric > PELCO > PELCO Diagnostic Player).

A console window and the PELCO Diagnostic Player will be displayed.

At the bottom of the PELCO Diagnostic Player window, click the Configuration button to launch the Network Stream Settings dialog box.

⚠ WARNING

DELAYED OR INCORRECT VIDEO

Ensure that cameras are configured to overlay the time-stamp & camera information on the video stream to assist operators in correctly identifying the camera and the time at which the image was relayed.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

If using RTP mode to connect to the camera, please ensure you enter valid values for:

- Camera IP address
- Camera Port (default is 49152 - check camera manual)
- ServiceID set to 1 (default camera number)

Optionally enter valid values for:

- Local IP address
- Local Port (default is 9102)
- Select the unicast check box

If using RTSP mode to connect to a Sarix camera, the connection can be established using the following RTSP URL:

RTSP://<*IP Address*>/stream1

Note: "stream1" or "stream2" is required as a string to connect to the camera.

Press the **Connect** button. The PELCO Diagnostic Player window should display live video streamed from your camera.

If the viewer is not showing live video image from your camera, that is the player shows the default PELCO screen, then the camera is not connected. Please make sure that all required software is installed on your computer and that the correct IP addresses and ports are used. If the lack of connection persists, see Troubleshooting which contains information on testing the camera using the PELCO software.

Note: Check that the ports are not blocked by the network administrator and that the IP addresses are accessible.

Finding the camera's IP address, port and number

Finding the IP address

You can use the PELCO Device Utility to determine the IP address of your camera. The PELCO Device Utility can be found on the resource CD which is shipped with the camera. For information about how to install the PELCO Device Utility, please refer to the PELCO documentation.

1. Choose Start > Programs > PELCO > Device Utility > PELCODeviceUtility
2. Your camera's IP address will be shown after the PELCO Device Utility has started
3. If the camera's IP address is still not shown then click the "Search Now" button and your camera should be detected by the utility.
4. If your camera's IP address is still not shown, make sure it is connected to your network and that the camera is not blocked by your network. In some cases, the addresses are blocked by network administrators or local network rules.

Finding the port number

PELCO IP cameras usually have default ports of either 49152 or 49157. A different port number can be assigned. For further information, please refer to your PELCO camera's manual.

Alternatively, reset the values to the factory defaults with the reset button on the camera.

Finding the camera number

In the majority of cases, the default number is 1. If the camera is used in conjunction with a PELCO DVR, then the camera number is assigned on the DVR.

Checking camera availability

There are two ways to check the availability of a camera from your computer, using the PELCO Device Utility or using Internet Explorer.

Using the PELCO Device Utility

You can use the PELCO Device Utility to determine availability of your camera. The PELCO Device Utility can be found on the resource CD shipped with the camera. For information about how to install the PELCO Device Utility, please refer to the PELCO camera's documentation.

1. Choose Start > Programs > PELCO > Device Utility > PELCODeviceUtility
2. Click the **Connect** button for your camera.

Using Internet Explorer

1. Open Microsoft Windows Internet Explorer and enter the camera's IP address in the URL field. For example, http://10.176.234.163
2. The login window will be displayed.
3. Log in with your user name and password. The defaults are "admin" and "admin," if you have not changed them.
4. After the first successful login, you will be prompted to install an ActiveX control on your computer. Accept it and install the ActiveX control on your computer.
5. Once the installation is complete, your camera will be connected and video will stream in your browser.

If there are any difficulties, please refer to Troubleshooting, your PELCO manual or contact PELCO support to address this before proceeding further with the project.

Chapter 3: Connecting to a PELCO Camera from a Project

There are three ways to connect to a PELCO camera from within a SCADA project:

- Configuring during design time
- Using tag association
- Using Cicode

Configuring during design time

The quickest method of using a PELCO camera in your project is to place the PELCO Viewer ActiveX control on a page and then configure it directly:

1. Add a PELCO Viewer ActiveX control to your page (see Adding PELCO Viewer ActiveX Control).
2. Configure the camera's configuration properties directly in the PELCO Viewer Properties window (see Configuring PELCO Viewer Properties).
3. Compile and run the project.
4. Once the project is running, update your Page List from the Pages menu and then navigate to the new camera page.

Adding the PELCO Viewer ActiveX Control

Once the PELCO Viewer ActiveX Control has been installed, you can add the Viewer to your project pages. In SCADA v7.20 or later, open the Graphics Builder and click the Add PELCO Viewer ActiveX button on the toolbar:

In SCADA v7.10 or earlier, the PELCO Viewer can be inserted by clicking on the Insert ActiveX Control button in the Graphics Builder toolbar.

The PELCO Viewer will be added to your graphics page.

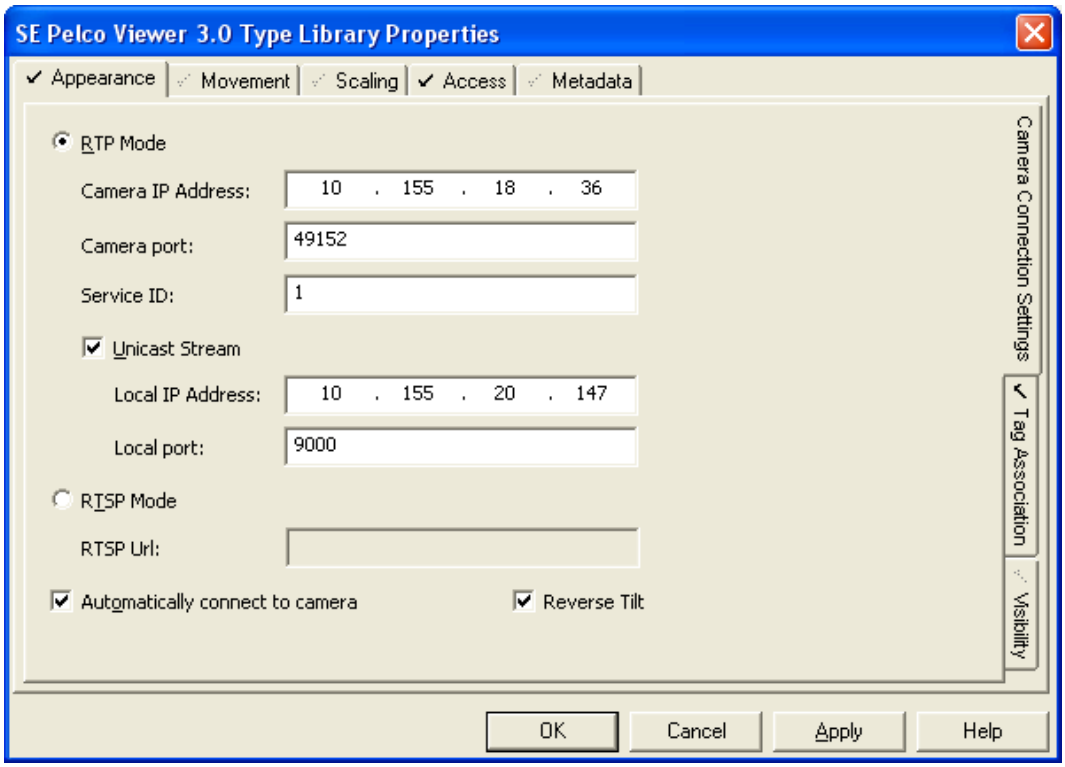
Configuring PELCO Viewer properties

Open the PELCO Viewer Properties window. On the Access tab and Identification sub-tab, set the Object Name to "PELCOCam".

On the Appearance tab and "Camera Configuration Settings" sub tab, provide the camera configuration details. The below example shows a typical configuration for an RTP camera. See PELCO Viewer ActiveX Control Interface Properties for information about these properties.

Click the "Automatically connect to camera" checkbox to automatically connect the camera to the Viewer upon start. If this checkbox is not checked, the operator will have to click the Connect button to connect to the camera.

See Finding the Camera's IP Address, Port and Number for information.



⚠ WARNING

INCORRECT VIDEO DISPLAYED

Ensure that continuous port numbers are not used for multiple cameras on the same page when using unicast stream.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

When working with two or more cameras on a single page, unicast stream port values should not be continuous because the next immediate port numbers are reserved for PTZ operations. For example, if you have configured the unicast stream port value as 9001 for one camera and 9002 is used for the next camera then both cameras will display the same image.

Once the configuration is updated, click the Apply button.

Using tag association

To create a PELCO Viewer control using tag association:

1. Create Tags for camera properties.
   To be able to connect to a PELCO camera from the PELCO Viewer ActiveX Control at runtime, you will need to pass the camera connection information to an object in the PELCO Viewer ActiveX Control. These camera properties are stored in tags defined within SCADA. For details about how to create tags, please refer to the SCADA online help.
   For example, for each RTP camera the following basic camera properties must be defined:
   - Camera IP address – String type
   - Camera port number – Long type
   - Camera number – Long type
   - Unicast stream – Digital type
   - Unicast stream IP address – String type
   - Unicast port number – Long type
   - Auto Connect – Digital type

   For a full list of camera properties see PELCO Viewer ActiveX Control Interface Properties.
2. Add a PELCO Viewer ActiveX control to your page (see Adding the PELCO ActiveX Control).
3. Map tags to properties.

Open the PELCO Viewer Properties window. On the Access tab and the Identification subtab, set the Object Name to "PELCOCam". Make sure the “Persist ActiveX data between page transitions” checkbox is checked.
Then on the Appearance tab and Tag Association sub-tab, map the variable tags created above to the camera's properties.

4. Create buttons and objects to control the camera (see Controlling the camera).
5. Compile and run the project (see Compiling and running the project).

Controlling the camera

This section describes how to create buttons to control the camera's properties and display them on the graphics page at runtime.

Managing camera properties

The SetValue genie has been included to simplify the creation of buttons and text objects that will change the properties of the PELCO camera. For example, in order to be able to change the IP address of the camera during runtime, you should use the SetValue genie to create a new IP Address button with the Label "IP Address", and the Variable as "IpAddress".

See Genies for more information on the genies included with the PELCO Viewer ActiveX Control.

Similarly you can create buttons objects for the following camera properties:

- Camera IP address
- Camera port number
- Camera number
- Unicast stream
- Unicast stream IP address
- Unicast port number
- Auto Connect

Adding the Connect and Disconnect function

To add a connect button to your graphics page, create a new button and add the label "Connect". Under the Input tab, add the following action to the Up command:

```
_ObjectCallMethod(ObjectByName("PELCOCam"), "Connect");
```

Similarly, create a new button with the label "Disconnect". Add the following action to the Up command:

```
_ObjectCallMethod(ObjectByName("PELCOCam"), "Disconnect");
```

Compiling and Running the Project

After the PELCO camera page has been created in your project, compile and run the project. Once the project is running, update your Page List from the Pages menu and then navigate to the new camera page.

1. Click the IP Address button and enter the IP address of the camera.
2. Enter the other required camera properties.
3. Click the Connect button and the PELCO Viewer should be connected to the camera as below:

A pan, tilt and zoom toolbar and popup menu are provided to control the PELCO PTZ cameras. Right-click the viewer window and choose to show the toolbar. The PELCO PTZ camera can also be controlled by using the mouse. Click and hold the left mouse button, and move the mouse to control the camera. See PELCO Viewer Mouse Controls for more information.

It is now possible to view the live video and control the PELCO camera using the built-in pan, tilt and zoom controls such as toolbar buttons, mouse and popup menus. See Pan, Tilt and Zoom Toolbar for more information. Cameras can also be controlled using customised buttons. Some examples of custom control buttons can be seen in the PELCO example project.

Using Cicode

A PELCO camera control can be created and the camera controlled using Cicode functions. The PELCO Viewer ActiveX Control comes with a group of programming interfaces which can be accessed via Cicode. The two examples below demonstrate how to use Cicode to control your camera through the programming interface.

Example

In this example, a Cicode command is embedded in a Button object named Left that will control the camera to pan left at runtime.

The Cicode command for the button down input is:

```
_ObjectCallMethod(ObjectByName("PELCOCam"), "PanLeft");
```

The Cicode command for the button up input is:

```
_ObjectCallMethod(ObjectByName("PELCOCam"), "PanStop");
```

In this case, when the button is clicked, the camera will pan to the left. The pan left operation stops when your button is released. “PELCOCam” used in the Cicode function is the object name assigned to the PELCO Viewer ActiveX Control object on the page of your project.

Example

In this example, two Cicode functions are defined that do the same job as the example above.

```
FUNCTION RunPanLeft()
   OBJECT hPELCOPTZ = ObjectByName("PELCOCam");
   _ObjectCallMethod( hPELCOPTZ, "PanLeft");
END
FUNCTION RunPanStop()
   OBJECT hPELCOPTZ = ObjectByName("PELCOCam");
   _ObjectCallMethod( hPELCOPTZ, " PanStop");
END
```

Saving settings between page transitions

When you set properties on the PELCO Viewer control from Cicode and move off the page, your changes will be lost. This behavior is not always what you want, so the Graphics Builder provides a "Persist ActiveX data between page transitions" option to save the state of an ActiveX control when you switch between pages.

Enabling this option causes SCADA to write a temporary file to the Data directory in the format of <Event class>.stg whenever you leave a page that contains an ActiveX object (for example, the PELCO Control). When you reenter the page, SCADA looks for that same file and, if found, will load the settings from it. These files only exist while SCADA run time is running. When you shut down SCADA, the temporary *.stg files are deleted.

To save between page transitions:

1. Double-click the PELCO ActiveX control you want to change. The Properties dialog box appears.
2. Click the Access tab.
3. Click the Identification tab. The Identification panel appears.
4. In the Persistence area, select the Persist ActiveX data between page transitions check box, and then click Apply.

Chapter 4: PELCO Example Project

To test the PELCO cameras in the SCADA system, a PELCO Example Project has been included in the installation. Example projects are provided in XP Style (Compatible with v7, v7.10 and v7.20) and Tab Style (v7.20). They can be found in the Projects sub folder of your chosen installation folder. After the project has been restored and compiled, enter the connection details on the page and connect to the camera. The PELCO Example project gives examples of one, two and four cameras, the Sarix camera, and Camera Management. Some genies have been developed to help you get started. The project can be expanded to cover more cameras and the genies can be reused in your own projects. The PELCO PTZ toolbar and popup menu are provided to control the camera(s) position, as well as mouse and customized control buttons.

PELCO Camera Management page

The PELCO Camera Management page can be used to add or edit PELCO camera information such as name, description, IP address, port, number, RTSP mode, RTSP URL and bandwidth. Camera information is stored in the database files in the projects folder. This functionality can also be used to test the camera video stream in order to make sure the information is valid after camera information is added or edited.

Camera Alarm Link

Alarm link provides a convenient way of integrating the alarm system and PELCO PTZ cameras. The key to implementing a PELCO camera link is to use Cicode to run the "Preset" method provided by the PELCO Viewer ActiveX Control programming interface. An example is provided to demonstrate this feature.

Example

In this example, there is a PELCO PTZ camera in the front entrance of an office and a PIR (sensor) installed to trigger the alarm.

To configure the Alarm Link

1. Configure the camera's preset (for example, 15) to point to the front entrance where the PIR (sensor) will be triggered when the area is armed or secured.
2. Create a digital alarm tag (for example, PIRTrigged).

3. Create a digital alarm.
4. Add a Cicode function as below:

```
FUNCTION FrontEntranceAlarmLink()
   OBJECT hPELCOPTZ = ObjectByName("PELCOCam");
   INT preset = 15;
   IF PIRTrigged = 1 THEN
      _ObjectCallMethod( hPELCOPTZ, "PresetRun", preset );
   END
END
```

5. If necessary, add a button to toggle the alarm at runtime.
6. Save, compile and run the project.
7. Open the camera page.
8. Make sure the camera is not pointing to the previously configured preset.
9. Trigger the alarm and check the change in the PELCO Viewer.

Genies

To simplify project creation, additional genies have been included in the example project for:

- **function** - used to call functions inside the ActiveX control on the one camera page.
- **setValue** - used to create buttons and text objects to change the properties of the PELCO camera.
- **pelcoCameraSelector** - used to manage multiple cameras on the PELCO Camera Management page.

See the PELCO Example Project for examples of these genies.

Chapter 5: Further Viewer Features

The PELCO Viewer includes the following features:

- Pan, Tilt and Zoom controls
- Popup menu controls
- Mouse Controls
- RTSP and Sarix Cameras

Pan, Tilt and Zoom toolbar

The PELCO Viewer includes a toolbar which allows the camera to be controlled using the mouse.

The toolbar has the following controls:

Icon	Description
	These controls enable the camera to Pan right or left (P)
	These controls enable the camera to Tilt up or down (T)
	Stop the Pattern, Tour, Scan and Pan or Tilt operations
	Move the camera to the home position
	Zoom near/far (Z)
	Focus near/far
	Iris close/open

This toolbar can be hidden by right-clicking the mouse button in the viewer window and checking Show/Hide Toolbar.

⚠ WARNING

CAMERA CONTROL CONFLICT

- If the PELCO cameras are being controlled exclusively through the SCADA system then ensure your SCADA system is designed to allow only one operator to perform operations on a camera at a time.
- If the PELCO cameras are being controlled independently by multiple systems (e.g SCADA and Security) then ensure you have a clear documented and communicated process in place to ensure no camera conflict occur.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Popup Menu Controls

The popup menu toolbar allows additional controls and configuration of camera features. Right click the PELCO Viewer to display the following options:

Pattern Operation:

The Pattern menu will appear when connected to a SpectraIV camera.

- Pattern > Run... - Runs the specified pattern
- Pattern > Record... - Begins recording a new pattern
- Pattern > End Record - Stops the current recording process

Click the Stop button in the PTZ Toolbar to stop the Pattern Operation.

Preset Operation:

The Preset menu will appear when connected to a camera equipped with PTZ functions.

- Preset > Run... - Runs the specified preset
- Preset > Set... - Sets the selected preset to the current camera position
- Preset > Delete... - Deletes the specified preset
- Preset > Home - Runs the currently configure home preset
- Preset > Configure Home Preset... - Allows specification of which preset represents the home position

Note: The number of presets that can be configured from PELCO ActiveX is 1-256 (based on the camera preset limit).

Scan operation:

The Scan menu will appear when connected to a SpectraIV camera equipped with PTZ functions. There are three built in scan sequences: auto, random and frame. The default is auto, which is a sequential scan.

- Scan > Scan Random - Continuously rotates the camera horizontally in random increments. Random scan, being random in nature, can take several seconds to commence
- Scan > Scan Frame - Continuously rotates the camera horizontally in 90 Degree increments
- Scan > Scan Auto - Continuously rotates the camera 360 degrees

Click the Stop button in PTZ Toolbar to stop the scan operation.

Tour operation:

The Tour menu will appear when connected to a Sarix camera equipped with PTZ functions.

- Tour > Run... - Runs the specified tour

Click the Stop button in the PTZ Toolbar to stop the Tour Operation.

Note: Tours must be created using the camera's web interface. For more information, please refer to the PELCO Spectra HD camera user manual. When creating the Tour from the web interface you must follow a strict naming convention in order to run the Tour from the PELCO Viewer. The tour name must contain and start with the (case-insensitive) word "Endura" AND a number afterwards. The Tour names must end in a digit and the set of all digits must be consecutively numbered starting at 1. Tour Name Examples: Endura Tour 1, Endura Tour 2, Endura Tour 3

Other Operations:

The Operation menu will appear when connected to a SpectraIV camera.

- Operations > Rotate 180 Degrees - Pans the camera 180 degrees from its present position.
- Operations > Pan to Zero - Pans the camera back to the camera's zero position. This is not necessarily the same as the home position for the camera.

Hide Toolbar controls:

Show/Hide Toolbar

Hide Status Bar:

Show/Hide Status Bar

PELCO Viewer mouse controls

The PELCO Viewer allows the camera to be directly moved using mouse controls:

Click and hold the left mouse button:

- Move the mouse left to move the camera to the left
- Move the mouse right to move the camera to the right
- Move the mouse up to move the camera up (if the **Reverse Tilt** check box is clicked the camera will move down instead)
- Move the mouse down to move the camera down (if the **Reverse Tilt** check box is clicked the camera will move up instead)

Use the mouse scroll wheel to zoom the camera near and far.

> **Note:** Mouse controls for Spectra HD Sarix cameras may have slow response times. To avoid this, use the buttons on the toolbar instead.

RTSP and Sarix cameras

Real Time Streaming Protocol, or RTSP, is an application-level protocol for control over the delivery of data with real-time properties. RTSP provides an extensive framework to enable controlled, on-demand delivery of real-time data such as video. Sources of data can include both live data feeds and stored clips. This protocol is intended to control multiple data delivery sessions, provide a means for choosing delivery channels, such as UDP, multicast UDP or TCP, and provide a means for choosing delivery mechanisms based on RTP (RFC 1889).

Sarix cameras have an RTSP server in the camera and the current PELCO Viewer ActiveX control supports both RTP and RTSP.

The SarixCamera page in the example project is designed for a Sarix camera.

Part: 2

Reference

This section describes the properties and methods used to access and control PELCO cameras from within SCADA. In addition it provides a troubleshooting section to help investigate loss of connection with your cameras.

PELCO Viewer ActiveX Control interface properties

PELCO Viewer ActiveX Control interface methods

Troubleshooting

Chapter 6: PELCO Viewer ActiveX Control Interface Properties

The following properties can be used to manage and control PELCO IP cameras in various ways, from video streaming, PTZ control speed and other properties at SCADA runtime. See "PELCO Viewer ActiveX Control Interface Properties"

Property	Description
AutoConnect	Connects to configured camera when page is loaded in runtime
Bandwidth	Returns the streaming video bandwidth constraints.
CameraNumber	Changes the active camera being viewed on a DVR.
CameraIpAddress	The IP address of the PELCO device where video is streamed from.
CameraPortNumber	The port number of the camera.
HomePresetId	Camera preset ID used for the home position/button on the PTZ control.
ReverseTilt	Reverses the tilt direction when using the mouse.
RtspMode	Specifies RTP camera or RTSP camera.
RtspUrl	Specifies the RTSP URL if the camera is a RTSP camera.
UnicastStream	Specifies whether unicast or muliticast
UnicastStreamIP	The IP address of your local computer that the PELCO device will stream the video to.
UnicastStreamPort	The port that the PELCO device will use for unicast listening in for the video.
VelocityHorizontal	The horizontal rotation velocity setting.
VelocityVertical	The vertical rotation velocity setting.

Properties

To be able to connect to a PELCO camera from the PELCO Viewer ActiveX control at run-time, the camera connection information must be specified to an object in the PELCO Viewer ActiveX control. When setting properties via Cicode, the values will not be persisted when you navigate away from the page and they will need to be set again when you re-open the page. You can have the last values automatically set either using tags (see Tag Association) or using the "Persist ActiveX data between page transitions" option.

Listed below are the properties of the PELCO Viewer ActiveX Control interface in this release.

AutoConnect

This property causes a configured camera to be automatically connected when the page is loaded in runtime. Set to "1" to enable auto connection.

Data Type: Digital

Allowable Values:

- 0 - AutoConnect property is Off
- 1 - AutoConnect property is On

Default Value: 0

Bandwidth

Returns the streaming video bandwidth constraints. The higher the bandwidth, the better the image quality, the greater the processing power, but the network traffic will also be greater.

There are three factors that affect bandwidth:

- The total number of cameras connected
- The motion type (low, medium, high) – A camera transmits actual frames and delta frames so the more the image changes, the higher bandwidth used
- Bandwidth type - There are three types of bandwidth setting in PELCO Viewer:

Bandwidth Settings	Frames/Sec	Bit Rate	Gop (Group of Picture)
High	30	2,000,000	15
Medium	30	150,000	15

Bandwidth Settings	Frames/Sec	Bit Rate	Gop (Group of Picture)
Low	30	198	15

For more information regarding bandwidth/network performance see UnicastStream property.

Data Type: Long

Allowable Values:

- 0 - High Bandwidth
- 1 - Medium Bandwidth
- 2 - Low Bandwidth

Default Value: 0

CameraNumber

Changes the active camera being viewed on a DVR. Set this value to 1 for normal IP cameras.

Data Type: Long

Allowable Values: Any valid PELCO camera number.

Default Value: 1

CameraIpAddress

The IP address of the PELCO device where video is streamed from.

Data Type: String

Allowable Values: Any valid PELCO camera IP address.

Example: 192.168.0.90

CameraPortNumber

The port number of the camera.

Data Type: Long

Allowable Values: Any valid PELCO camera port number.

Default Value: 49152

HomePresetId

Camera preset ID used for the home position/button on the PTZ control.

Data Type: Int

Allowable Values: Any valid PELCO camera preset number.

Default Value: 3

ReverseTilt

This property allows the user to reverse the tilt direction when using the mouse during RTP streaming.

Data Type: Digital

Allowable Values:

- 0 – Reverse Tilt property is Off
- 1 – Reverse Tilt property is On

Default Value: 0

RtspMode

Specifies the type of camera connected, either RTP or RTSP.

Data Type: Int

Allowable Values:

- 0 - RTP camera
- 1 - RTSP camera

Default Value: 0

RtspUrl

Provides the RTSP URL if the camera is a RTSP camera. Dependent on the configuration of the RTSP camera.

Data Type: String

Allowable Values: Any valid PELCO Sarix camera URL.

Example: rtsp://192.168.0.18/stream1

UnicastStream

Specifies either a unicast or multicast streaming type.

Unicast
A unicast connection sends a separate video stream from the camera to each Pelco Viewer (client). Although multiple Pelco Viewers might request the same data from the camera at the same time, a unique, separate video stream is transmitted to each Pelco Viewer.

Every unicast connection to the camera consumes additional processing power which limits the number of simultaneous clients which can access the camera.

PELCO cameras support a maximum of 20 simultaneous clients.

Multicast
A multicast connection sends a video stream to multiple PELCO Viewers (clients) at the same time using one, shared transmission stream. Unlike unicast, multicast communication requires much less processing power for the camera, instead your network design and the type of network switches used are the important factors in the number of clients that can be supported and the performance of your system. Multicast is useful only for local area networks and can be used to preserve network bandwidth.

For more information about network, bandwidth and Switch Compatibility related information please see Endura Network Design Guide and Endura Switch Compatibility

When using multi-cast please be aware that the video stream is sent to your primary network adapter. If you are running virtualization software on your machine it may prevent the video stream from being sent to your primary network adapter. Please see Troubleshooting for more information.

When a unique connection to the camera is required then select the unicast option and provide your computer's Local IP address and valid port details. The video will be streamed to this IP address. If this property is false then multicast streaming will be established.

Data Type: Digital

Allowable Values:

- 0 - Unicast Stream Off (Unicast Stream IP and port will be ignored)
- 1 - Unicast Stream On

Default Value: 0

UnicastStreamIP

The IP address of your local computer to which the PELCO device will stream the video.

Data Type: String

Allowable Values: Your local computer's IP address

UnicastStreamPort

The port that the PELCO device will use for Unicast listening for the video.

Data Type: Long

Allowable Values: Your local computer's port number used for video stream.

> **Note:** Unicast stream port values should not be consecutive for different cameras on the same page because the next immediate port numbers are reserved for PTZ operations.

VelocityHorizontal

The horizontal rotation velocity setting.

Data Type: Long

Allowable Values: Any valid PELCO camera horizontal velocity number. This is for PTZ cameras only.

Default Value: 64000

VelocityVertical

The vertical rotation velocity setting.

Data Type: Long

Allowable Values: Any valid PELCO camera vertical velocity number. This is for PTZ cameras only.

Default Value: 8000

Reading and writing to properties

Properties listed in the previous section can be read and written at runtime with the Cicode functions `_ObjectGetProperty` and `_ObjectSetProperty`. The example below shows how to modify the camera's horizontal velocity at runtime. If the camera is panning too slow or too fast, increase or decrease the camera's horizontal velocity at runtime accordingly to personalise the requirements.

Example

Where "PELCOCam" is the object name of a PELCO Viewer ActiveX Control instance inserted on a graphics page.

```
FUNCTION SetVelocityHorizontal()
   OBJECT hPELCOPTZ = ObjectByName("PELCOCam");
   INT oldSpeed = _ObjectGetProperty(hPELCOPTZ,"VelocityHorizontal");
   INT newSpeed = StrToInt(Input("Velocity Horizontal", "Enter pan speed", old-
Speed));
   _ObjectSetProperty( hPELCOPTZ, "VelocityHorizontal", newSpeed );
END
```

Chapter 7: PELCO Viewer ActiveX Control Interface Methods

The PELCO Viewer ActiveX Control methods are designed to give you the ability to control PELCO cameras automatically as much as possible. For example, you can automatically switch to another camera in a viewer or to a different preset, or run a pattern. The list below provides some tasks that can be achieved automatically:

- Switch cameras in a viewer
- Send focus (+ or --) commands
- Send PTZ commands to a PELCO PTZ camera
- Send iris close/open commands
- Send create/go to/delete preset commands
- Record and run patterns

In this section, available methods have been categorised and listed for each category. Additional details on how to use these methods in each category are provided in the examples.

The main categories for methods are:

- Connection methods
- Customize User Interface methods
- PTZ methods
- Preset methods
- Pattern methods

Connection Methods

Connection methods are used to connect to and disconnect from a PELCO device.

The table below contains connection methods for the PELCO Viewer ActiveX Control interface in this release.

Method Name	Description
Connect()	Connect to the PELCO device video stream specified

Method Name	Description
	by the properties. It is used for both RTP and RTSP cameras.
Disconnect()	Disconnect from the PELCO device stream. It is used for both RTP and RTSP cameras.
Connect(*CameraBandwith*)	Connect to the PELCO device video stream and set up bandwidth specified by the Properties. This method is supported for both RTP & RTSP streams. Where *CameraBandwith* is 0, 1 or 2 (0 - high bandwidth, 1 - medium bandwidth, 2 - low bandwidth). The default value is 0. See also Bandwidth property.

Example

To connect to a camera, the Connect() method should be used. The example below shows how Cicode can be used to connect to a PELCO camera. The other two methods can be used in the same way as this method. "PELCOCam" used in the example code is the actual object name that has been assigned to the PELCO Viewer ActiveX Control object in this project.

```
FUNCTION ConnectCamera()
   OBJECT hPELCOCam = ObjectByName("PELCOCam");
   _ObjectCallMethod(hPELCOCam, "Connect");
END
```

Customize User Interface methods

Customize User Interface methods are used to customize the PELCO Viewer user interface.

The table below contains customization methods for the PELCO Viewer ActiveX Control interface in this release.

Method Name	Description
ShowHideStatusbar(bool status)	Show or hides the status-bar
ShowHideToolbar(bool status)	Show or hides tool-bar for PTZ cameras

PTZ Methods

PTZ methods are used to pan, tilt and zoom a PELCO PTZ camera and are not applicable to fixed cameras. If the camera supports it, it can also change the focus and iris on any camera that support those functions programmatically.

The table below contains the PTZ methods for PELCO Viewer ActiveX Control in this release.

Method Name	Description
PanLeft()	Start panning the camera to the left. PanStop() is required to stop the camera panning.
PanRight()	Start panning the camera to the right. PanStop() is required to stop the camera panning.
PanUp()	Start tilting the camera up.
PanDown()	Start tilting the camera down.
PanStop()	Stop panning the camera.
ZoomIn()	Start zooming the camera in.
ZoomOut()	Start zooming the camera out.
ZoomStop()	Stop zooming the camera.
FocusNear()	Start focusing the camera on objects that are closer.
FocusFar()	Start focusing the camera on objects that are farther.
FocusStop()	Stop focusing the camera.
FocusAuto()	Auto-focus the camera.
IrisOpen()	Start opening the camera's iris to brighten the image.
IrisClose()	Start closing the camera's iris to darken the image.
IrisStop()	Stop resizing the iris.
IrisAuto()	Auto-adjust the camera iris.

When a pan method is called, for example PanLeft, it will continue to run until a PanStop method is called.

⚠ WARNING

LOSS OF CONTROL

Ensure PanStop is called when PanLeft or PanRight methods are used.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Note: PanLeft and PanRight methods require PanStop to be called to stop the camera from continuously panning.

Example

An example has been provided below on how to use the PanLeft method to pan a PTZ camera left for 10 seconds and then stop the operation. Any other PTZ methods can be used in the same way as this method. "PELCOCam" used in the example code is the actual object name that has been assigned to the PELCO Viewer ActiveX Control object in this project.

```
FUNCTION PanCameraLeft()
   OBJECT hPELCOCam = ObjectByName("PELCOCam");
   _ObjectCallMethod(hPELCOCam, "PanLeft");
   SleepMS(10000);
   _ObjectCallMethod(hPELCOCam, "PanStop");
END
```

Preset Methods

The preset methods are used to manage and run presets on a PELCO PTZ camera and are not applicable to fixed cameras. Home is also a special preset in the PTZ camera. It is also possible to set the Home position and point the camera to the Home position that has been selected for the camera.

The table below contains preset methods for the PELCO Viewer ActiveX Control interface in this release.

Method Name	Description
PresetDelete(long presetId)	Deletes the specified preset ID.
PresetSet(long presetId)	Stores the current camera position (pan/tilt) and zoom level at the specified preset ID.
PresetHomeSet()	Stores the current camera position and zoom level as the home preset ID (defaults to preset ID 3) This is the Preset ID that is run when the Home button is clicked.
PresetRun(long presetId)	Moves the camera to the location and zoom level stored at the specified preset ID.
PresetHomeRun()	Moves the camera to the location and zoom level stored in the home preset ID (defaults to preset ID 3). This is the preset ID that is run when the Home button is clicked.

Example

The example below shows how to use the PresetRun method to control the PTZ camera. Other preset methods can be used in the same way as this method. In the example below, a Cicode function has been written to run a preset position that has been programmed and stored into the PTZ camera. "PELCOCam" used in the example code is the actual object name that has been assigned to the PELCO Viewer ActiveX Control object in this project.

```
FUNCTION RunPreset()
   OBJECT hPELCOCam = ObjectByName("PELCOCam");
   INT preset = StrToInt(Input("Run Preset", "Enter the Preset number to Run", "1"
));
   _ObjectCallMethod(hPELCOCam, "PresetRun", preset );
END
```

Example

In example below, the Cicode function demonstrates how to save the PTZ camera's current position and settings as the Home position.

```
FUNCTION SaveHomePosition()
   OBJECT hPELCOCam = ObjectByName("PELCOCam");
```

```
   _ObjectCallMethod(hPELCOCam, "PresetHomeSet" );
END
```

Pattern Methods

Pattern methods are used to record and run patterns on a PELCO PTZ camera and are not applicable to fixed cameras.

The table below contains pattern methods for the PELCO Viewer ActiveX Control interface in this release.

Method Name	Description
PatternRun(long patternId)	Run the camera movement pattern specified by the pattern ID.
PatternStop(long patternId)	Stop the camera movement pattern specified by the pattern ID.
PatternStart(long patternId)	Start recording the camera movement pattern specified by the pattern ID.
PatternEnd(long patternId)	End recording for the camera movement pattern specified by the pattern ID.

Note: If you use the PatternStart method to start recording a pattern, then a PatternEnd method must be used to end the recording. Also note that there is only one pattern supported on some PELCO PTZ cameras in IP mode.

⚠ WARNING

LOSS OF CONTROL

Ensure PatternStop is called when PatternStart() method is used.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Example

The example below shows how to use the PatternRun method to run a pattern on the PTZ camera. Other pattern methods can be used in the same way as this method. In the example below, a Cicode function has been written to run a pattern previously recorded and stored in the PTZ camera. "PELCOCam" used in the example code is the actual object name that has been assigned to the PELCO Viewer ActiveX Control object in this project.

```
FUNCTION RunPattern()
   OBJECT hPELCOCam= ObjectByName("PELCOCam");
   INT pattern = StrToInt(Input("Run Pattern", "Enter the Pattern Number to Run",
"1" ));
   _ObjectCallMethod(hPELCOCam, "PatternRun", pattern );
END
```

Chapter 8: Troubleshooting

In this section, some guidelines and tips are provided for debugging on PELCO camera-related projects. When working with PELCO Viewer ActiveX control, you will be able to see real time camera status in the 'status bar' and additional information will be logged in the Windows 'event viewer'. Enter the "eventvwr" run command to launch the Event Viewer. For specific PELCO camera difficulties, please refer to your PELCO camera's manual.

Devices and tools

Essential devices

In order to analyse functionality related to PELCO camera projects, you will need either direct or indirect access to a PELCO IP or Sarix camera. Be aware that if the camera is accessed over the Internet, you will experience poor streaming quality and very poor responsiveness to the camera controls.

Essential tools/utilities

There are some tools and utilities recommended to assist in analysing the functionality of PELCO camera on SCADA projects:

- PELCO Device Utility – Assists in locating a PELCO camera IP address on your network.
- PELCO Diagnostic Player – Tests camera video rendering on the system.
- DXDIAG – Checks the DirectX version and sets and tests Direct3D acceleration on your computer.
- DESK.CPL – Checks dedicated on-board memory on your graphic card.
- Wireshark – Checks network communication between your computer and PELCO camera.
- Intel UPnP Device spy – Locates the PELCO RTP camera IP address and port number.

Implementation checklist

Before debugging you system, please go through the checklist below to make sure that the PELCO camera has been implemented optimally.

- The Hardware and software requirements in the Installation Requirements have been met or exceeded.
- Only PELCO IP or Sarix cameras have been tested and are supported.
- Only use a cable modem router or a switch with a DHCP server when installing PELCO IP cameras on a network.
- Do not use a HUB in the network setup of an IP camera.
- Place PELCO cameras behind a firewall when they are connected to a network.
- Install the latest version of the PELCO Viewer ActiveX Control.

Debugging procedure

Generally, there are three types of functions to analyse:

- Camera hardware, setup or network related
- PELCO Viewer ActiveX and its dependencies software setup/configuration related
- PELCO Viewer ActiveX configuration/setup in SCADA projects during SCADA project configuration or runtime

The procedure listed below will help you identify the type of issue and assist with debugging.

1. Is the camera a PELCO camera?
   This manual addresses issues with PELCO cameras only.
2. Can you view the video stream in Internet Explorer?
   If not, there may be an issue with the camera, installation or network.
3. Can you view the video stream in PELCO Diagnostic Player?
   If not, there may be an issue with the PELCO Viewer installation. Re-install and configure the PELCO Viewer and try again.
4. Can you view the video stream in SCADA runtime?
   If not, there may be some project related issue preventing access to the video stream. Try to connect to the camera using the PelcoExample test project.

See the Troubleshooting Guide section for information.

Enabling event logs

⚠ WARNING

REGISTRY CORRUPTION

Do not attempt to modify registry settings unless you are an expert user of the Windows operating system and SCADA, or are under the direct guidance of technical support for this product.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

To enable event logs, open a registry editor and make the following change:

1. In Windows Run Command type “regedit”
2. Navigate to “HKEY_LOCAL_MACHINE\SOFTWARE\Schneider Electric\Pelco”
3. Set the “Log Value” key to "1" to enable event logging and "0" to disable event logging.

Troubleshooting guide

Symptom: .NET Framework 3.5 SP1 fails to install through web directly.

Possible Issue	Remedial Action
A port may be blocked from downloading and installing the installer directly from web.	Download the full package of .NET 3.5 SP1 manually and install it before installing Pelco Viewer. The full version can be downloaded from the Microsoft website.
Installer might launch a link to download .NET version other than 3.5 SP1	

Symptom: During Uninstalling PelcoViewer an error message saying "Error 1001: InstallUtilLib.dll. Unknown error." is appearing.

Possible Issue	Remedial Action
The necessary .NET version missing.	Install .NET Framework 3.5 SP1 and un-install Pelco Viewer.

Symptom: In case of #COM errors or Runtime values for tags not getting updated/refreshed.

Possible Issue	Remedial Action
Sample project restore/pages update issues.	Run Computer Setup wizard or navigate to another page and then return to the page causing update issues.

Symptom: Application hangs on some invalid IP address input.

⚠ WARNING

REGISTRY CORRUPTION

Do not attempt to modify registry settings unless you are an expert user of the Windows operating system and SCADA, or are under the direct guidance of technical support for this product.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Possible Issue	Remedial Action
Web-service not returning the values.	Follow the below steps: 1. Open Registry editor. 2. Navigate to "HKEY_LOCAL_MACHINE\SOFTWARE\Schneider Electric\Pelco" path 3. Change the value for "ConnectionTimeout". The values can be between 5-30(in seconds).

Symptom: RTP camera has no video at runtime

Possible Issue	Remedial Action
Are the camera IP address, port number and camera number correct?	Use Intel UPnP Device spy to check your camera IP address and port number. The port number usually has a default value 49152 and camera number should be 1.
	If not, (if they are different from camera IP address and port number reported by Intel UPnP Device spy), try the new IP address and port number.
	If yes, (they are the same), or there is still no video image when trying the new values, then continue.
Is it working in Web browser?	If no, refer to PELCO manual or contact PELCO support.
	If yes, try connecting the camera from PELCO Diagnostic Playerr.
You are using multi-cast and have virtualization software installed such as VMWare.	Virtualization software typically installs its own software network adapters on your machine. These adapters, if enabled, can steal multi-cast traffic. Resolutions include: 1. Disable virtual network adapters 2. Use a unicast connection and specify your network adapter 3. Consult your virtualization software manufacturer for other solutions

Symptom: PTZ too slow or fast

Possible Issue	Remedial Action
Does this happen when using toolbar PTZ control buttons?	If yes, this is by design and cannot be changed during runtime. If no, please continue.
Does this happen when using mouse control?	If yes, this is by design and cannot be changed during runtime. If no, please continue.
Does this happen when using customized control or Cicode?	If no, please refer to information above.
	If yes, increase or decrease horizontal or vertical velocity to adjust PTZ speed until you are satisfied.

Symptom: PTZ control latency is too long

Possible Issue	Remedial Action
Image quality and bandwidth too high	Reduce bandwidth.
Too many concurrent camera connections	Reduce number of concurrent camera connections.
Network traffic is too heavy	Reduce unnecessary network traffic if possible.
Network too slow	Make sure the camera is within the local network. Improve network speed.

Symptom: Video streaming not working on Sarix camera

Possible Issue	Remedial Action
Is it working in Web browser?	If no, please refer to PELCO manual or contact PELCO support.
	If yes, try connecting the camera from PELCO Diagnostic Player.
Have you set RtspMode property to true at runtime?	If no, set RtspMode property to true (non-zero value) at runtime and try again.
	If yes, continue.
Have you set RtspURL property to correct value at runtime?	If no, set RtspURL property to the correct value at runtime and try again. The default format of this property is: Rtsp://Camera_IP_Address/stream1

Symptom: Two or more video streams not working on same page

Possible Issue	Remedial Action
Caused by conflicting object names assigned to the PELCO Viewer ActiveX Control object	Rename conflicted object name assigned to the PELCO Viewer ActiveX Control object
Caused by conflicting object names used in Cicode Connect function	Rename conflicted object name used in Cicode Connect function
Caused by conflicting uni-casting port numbers	Resolve conflicted uni-casting port number. Any uni-casting port number can only be used once.

Symptom: Poor image quality

Possible Issue	Remedial Action
Image is not focused	Adjust focus
Bandwidth is too low	Increase camera bandwidth
There is not enough dedicated memory	Replace current graphics card/computer with graphics card/computer that has more dedicated memory

Symptom: Slow video responsiveness

Possible Issue	Remedial Action
Too many concurrent camera connections	Reduce number of concurrent camera connections on the same page
There is not enough dedicated memory	Replace current graphics card/computer with graphics card/computer that has more dedicated memory
Bandwidth is too high	Reduce camera bandwidth
The computer specification is too low and does not meet the recommended hardware requirements	Use a higher performance computer

Symptom: Alarm link does not work

Possible Issue	Remedial Action
Preconfigured preset in PELCO PTZ camera has been lost or deleted.	Reconfigure the predefined preset in PELCO PTZ camera.
Cicode error in the project	Fix Cicode error in the SCADA project.

Glossary

A

ActiveX
A framework for defining reusable software components that perform a particular function or set of functions in Microsoft Windows in a way that is independent of the programming language used to implement them. A software application can then be composed of one or more of these components in order to provide its functionality.

D

DVR
Digital Video Recorder

I

Iris
A mechanical device found in cameras that mimics the function of the biological iris.

P

PELCO camera
In this document, PELCO camera refers to PELCO IP cameras and PELCO Sarix cameras.

PELCO device
In this document, PELCO device refers to PELCO RTP and RTSP cameras.

PTZ
Pan, Tilt and Zoom

R

RAM
Random Access Memory

RTP
Real-Time Transport Protocol

RTSP
Real-Time Streaming Protocol

S

Sarix
A new camera imaging technology developed by Pelco

SCADA
Supervisory Control and Data Acquisition. In this document, SCADA refers to Vijeo Citect, Citect-SCADA or CitectFacilities

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